AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A computer-implemented method for determining a production plan comprising:

receiving customer demands for resources from different customers;

rank ordering, by a computing device, said customer demands to create prioritized customer demands;

aggregating, by said computing device, said prioritized customer demands into a plurality of priority groups based on said rank ordering of said customer demands;

optimizing, by said computing device, a first mathematical linear programming model based on processing a highest priority group of said plurality of priority groups;

assigning, by [[a]] said computing device, a portion of said resources to ~~different customers having prioritized customer demands~~ said highest priority group of said plurality of priority groups ~~by iteratively~~ based on ~~solving~~ said optimizing said first mathematical linear ~~programs~~ programming model;

~~optimizing, by said computing device, each mathematical linear program according to one of a plurality of sets of prioritized customer demands wherein each set contains a plurality of prioritized customer demands;~~

determining, by said computing device, each iterative solution for remaining ones of said plurality of ~~sets of prioritized customer demands~~ priority groups in order of said rank ordering of said customer demands using results from a previous mathematical linear ~~program~~ programming model solution;

assigning, by said computing device, remaining resources to a next highest priority group of said plurality of priority groups based on said determining each iterative solution;

outputting, by said computing device, said production plan based on said ~~optimizing said each mathematical linear program and determining each iterative solution~~[[,]]assigning resources;

independently determining, by said computing device, backorder costs penalties for each ~~set of prioritized customer demands~~ of said plurality of priority groups using said computing device; and

assigning, by said computing device, by each successive mathematical linear programming model, a range of said backorder costs within a priority group of said plurality of priority groups to which resources are currently being assigned.

2. (Previously Presented) The method of claim 1, wherein said prioritized customer demands are hierarchical and comprises two or more levels of hierarchy.

3. (Cancelled).

4. (Previously Presented) The method of claim 1, wherein said mathematical linear programs solved in each iteration use the solution to the previous mathematical linear program as a starting solution.

5. (Previously Presented) The method of claim 1, further comprising adding constraints to said mathematical linear ~~programs~~ programming models at each iteration ~~to~~ ensure ~~that solutions to subsequent iterations are equal to previous solutions~~ a feasible starting solution

for re-optimizing said mathematical linear programming models.

6. (Original) The method of claim 1, wherein said method uses a different mathematical linear program for each iteration.

7. (Currently Amended) The method of claim 1, wherein said assigning process solves said mathematical linear programs for higher prioritized customer demands before solving said mathematical linear programs for lower ~~priorities~~ prioritized customer demands.

8. (Previously Presented) A computer-implemented method of assigning resources to a hierarchy of prioritized customer demands in a linear programming production planning system for determining a production plan, said method comprising:

receiving customer demands for resources from different customers;

rank ordering, by a computing device, said customer demands to create prioritized customer demands;

aggregating, by said computing device, said prioritized customer demands into ~~different~~ a plurality of priority groups based on said rank ordering of said customer demands;

optimizing, by said computing device, a first mathematical linear programming model based on processing a highest priority group of said plurality of priority groups;

assigning, by said computing device, a portion of said resources to ~~customers having the~~ a highest priority group of ~~prioritized customer demands~~ said plurality of priority groups based on said optimizing ~~using a~~ said first linear programming model;

assigning, by said computing device, portions of remaining resources to ~~the~~ a next highest priority group of ~~prioritized customer demands~~ said plurality of priority groups using a

second mathematical linear programming model, wherein said second mathematical linear programming model uses results from said first mathematical linear programming model;

repeating said process of assigning portions of remaining resources, by said computing device, to ~~the~~ remaining groups of ~~prioritized customer demands~~ said plurality of priority groups in order of priority, wherein each subsequent mathematical linear programming model uses results from a previous linear programming model; and

outputting, by said computing device, a production plan based said ~~processes of~~ assigning resources,

wherein during said assigning processes, each mathematical linear programming model assigns a range of backorder costs within the priority group of said plurality of priority groups to which the resources are currently being assigned.

9. (Previously Presented) The method in claim 8, wherein when repeating said process of assigning remaining resources, said method uses a different linear programming model for each repetition of said process of assigning remaining resources.

10. (Currently Amended) The method in claim 9, wherein each different linear programming model uses as an initial constraint a program solution of the previous linear programming model.

11. (Previously Presented) The method in claim 8, wherein during said assigning processes, each linear programming model fixes variables associated with priority groups that have a lower priority than the priority group to which the resources are currently being assigned.

12. (Cancelled).

13. (Original) The method in claim 8, further comprising dividing said priority groups into different sub-priority tiers.

14. (Previously Presented) The method in claim 13, wherein said sub-priority tiers can be processed simultaneously.

15. (Currently Amended) A computer-implemented method of assigning resources to a hierarchy of prioritized customer demands in a linear programming production planning system for determining a production plan, said method comprising:

receiving customer demands for resources from different customers;

rank ordering, by a computing device, said customer demands to create prioritized customer demands;

aggregating, by said computing device, said prioritized customer demands into ~~different~~ a plurality of priority groups based on said rank ordering of said customer demands;

optimizing, by said computing device, a first mathematical linear programming model based on processing a highest priority group of said plurality of priority groups;

assigning, by said computing device, a portion of said resources to ~~customer having the~~ a highest priority group of ~~prioritized customer demands~~ said plurality of priority groups based on said optimizing ~~using a~~ said first linear programming model;

assigning, by said computing device, portions of remaining resources to ~~the~~ a next highest priority group of ~~prioritized customer demands~~ said plurality of priority groups using a second mathematical linear programming model, wherein said second mathematical linear

programming model uses results from said first mathematical linear programming model;

repeating said process of assigning portions of remaining resources, by said computing device, to ~~the~~ remaining groups of ~~prioritized customer demands~~ said plurality of priority groups in order of priority using a different mathematical linear programming model for each iteration, wherein each subsequent mathematical linear programming model uses results from a previous linear programming model; and

outputting, by said computing device, a production plan based said ~~processes of~~ assigning resources,

wherein during said assigning processes, each mathematical linear programming model assigns a range of backorder costs within the priority group of said plurality of priority groups to which the resources are currently being assigned.

16. (Previously Presented) The method in claim 15, wherein each different linear programming model uses as ~~a~~n initial constraint a program solution of the previous linear programming model.

17. (Previously Presented) The method in claim 15, wherein during said assigning processes, each linear programming model fixes variables associated with priority groups that have a lower priority than priority group to which the resources are currently being assigned.

18. (Cancelled).

19. (Original) The method in claim 15, further comprising dividing said priority groups into different sub-priority tiers.

20. (Previously Presented) The method in claim 19, wherein said sub-priority tiers can be processed simultaneously.

21. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform a method of assigning resources to a hierarchy of prioritized customer demands in a linear programming production planning system for determining a production plan, said method comprising:

receiving customer demands for resources from different customers;

rank ordering said customer demands to create prioritized customer demands;

aggregating said prioritized customer demands into ~~different~~ a plurality of priority groups based on said rank ordering of said customer demands;

optimizing a first mathematical linear programming model based on processing a highest priority group of said plurality of priority groups;

assigning a portion of said resources to ~~customers having the~~ a highest priority group of ~~prioritized customer demands~~ said plurality of priority groups based on said optimizing ~~using a~~ said first linear programming model;

assigning portions of remaining resources to ~~the~~ a next highest priority group of ~~prioritized customer demands~~ said plurality of priority groups using a second mathematical linear programming model, wherein said second mathematical linear programming model uses results from said first mathematical linear programming model; ~~and~~

repeating said process of assigning portions of remaining resources to ~~the~~ remaining groups of ~~prioritized customer demands~~ said plurality of priority groups in order of priority, wherein each subsequent mathematical linear programming model uses results from a previous

linear programming model; and

outputting, by said computing device, a production plan based said ~~processes of~~ assigning resources,

wherein during said assigning processes, each mathematical linear programming model assigns a range of backorder costs within the priority group to of said plurality of priority groups which the resources are currently being assigned.

22. (Previously Presented) The program storage device in claim 21, wherein when repeating said process of assigning remaining resources, said method uses a different linear programming model for each iteration.

23. (Previously Presented) The program storage device in claim 22, wherein each different linear programming model uses as an initial constraint a program solution of the previous linear programming model.

24. (Previously Presented) The program storage device in claim 21, wherein during said assigning processes, each linear programming model fixes variables associated with priority groups that have a lower priority than the priority group to which the resources are currently being assigned.

25. (Cancelled).

26. (Original) The program storage device in claim 21, wherein said method further

comprises dividing said priority groups into different sub-priority tiers.

27. (Previously Presented) The program storage device in claim 26, wherein said sub-priority tiers can be processed simultaneously.